Lesson 1.8 & 1.9: Coordinate Geometry and Graphing Calculators

Coordinate Geometry

The **distance formula** will give the distance _____ between two points: _____ and _____ in the plane.

Distance Formula:

Example: Which of the points $P(1,-2)$ or $Q(8,9)$ is closer to the point $A(5,3)$?

The **midpoint formula** helps us find a point that _____ a line segment.

Midpoint Formula:

Example: A line is defined by points $A(-1,2)$ and $B(3,4)$ find the midpoint that bisects $\overline{AB}$.

Graphs of Equations in Two-Variables

The graph of an equations in *x* and *y* is the _____ points (x, y) in the coordinate plane that satisfy the equation.

_____ : the *x*-coordinates of points where the graph of an equation intersects the *x*-axis.
- To find them, set $y = 0$ and solve for x.

_____ : the *y*-coordinates of points where the graph of an equation intersects the *y*-axis.
- To find them, set $x = 0$ and solve for y.

Symmetry

Type of Symmetry	How to Test for Symmetry	What the Graph Looks Like	Geometric meaning

Example: Use symmetry to sketch a graph of the equation $y = x^3 - 9x$. Make a table of values to help with the shape of the graph and find intercepts.
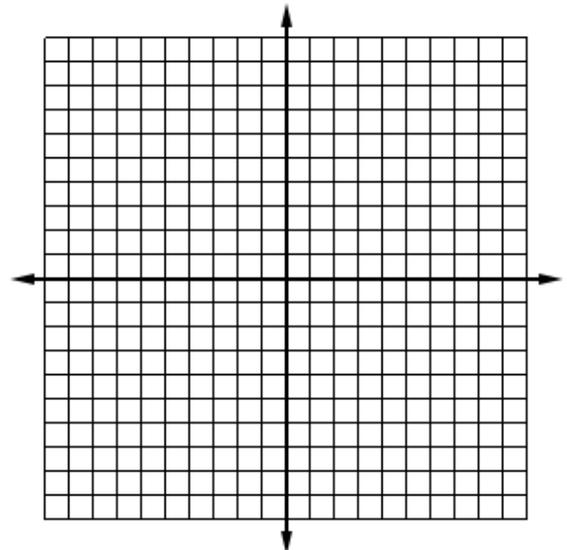
Graphing Calculators

A graphing calculator displays a _____ . The default screen often gives an incomplete or misleading view of the graph, so it is important to choose a viewing rectangle that suits your graph.

Example: Graph the equation $y = x^2 + 3$ in the appropriate viewing rectangle.

$x_{min} =$ $y_{min} =$

$x_{max} =$ $y_{max} =$

For some equations, you will have to isolate y before you can graph them.

Example: Graph the circle $x^2 + y^2 = 1$

You can also use a graphing calculator to solve inequalities.

Example: Solve the inequality $x^3 - 5x^2 + 8 \geq 0$ using a graphing calculator.